a constrained-envelope generator coupled to said pulse-spreading filter and configured to produce a constrained-bandwidth error signal stream;

a combining circuit coupled to said pulse-spreading filter and to said constrained envelope generator, said combining circuit configured to combine said filtered signal stream and said constrained-bandwidth error signal stream to produce a constrained envelope signal stream; and

a substantially linear amplifier having an input coupled to said combining circuit and having an output;

wherein:

said pulse-spreading filter is a first pulse-spreading filter;

said transmitter circuit additionally comprises a delay element coupled between said first pulse-spreading filter and said combining circuit; and

said constrained-envelope generator comprises a second pulse-spreading filter coupled to said combining circuit;

wherein:

said first pulse-spreading filter receives one quadrature phase point per unit baud interval and produces two complex samples of said filtered signal stream per unit baud interval;

said constrained-envelope generator evaluates one of said two complex samples of said filtered signal stream produced by said first pulse-spreading filter per unit baud interval; and

said second pulse-spreading filter receives one error pulse per unit baud interval and produces two complex samples of said constrained-envelope error-signal stream per unit baud interval.

24. (Four times amended) [A digital-communications transmitter circuit as claimed in claim 23] A constrained-envelope digital-communications transmitter circuit comprising:

a binary data source configured to provide a binary input signal stream;

a phase mapper coupled to said binary data source and configured to produce a quadrature phase-point signal stream, wherein said phase-point signal stream has a predetermined number of symbols per unit baud interval, said predetermined number of symbols defining a phase point in a phase-point constellation;

a Nyquist-type filter coupled to said phase mapper and configured to produce a filtered signal stream;

a constrained-envelope generator coupled to said Nyquist-type filter and configured to produce a constrained-bandwidth error signal stream;

a delay element coupled to said Nyquist-type filter and configured to produce a delayed signal stream synchronized with said constrained-bandwidth error signal stream;

a complex summing circuit coupled to said delay element and said constrained envelope generator and configured to produce a constrained-envelope signal stream; and

a substantially linear amplifier coupled to said complex summing circuit and configured to produce a radio-frequency broadcast signal;

wherein said Nyquist-type filter is a first Nyquist-type filter, said filtered signal stream includes a first filtered-signal data stream and a second filtered-signal data stream, and said complex summing circuit is a first complex summing circuit, wherein said transmitter circuit additionally comprises a quadrature threshold generator configured [to-provide] to provide a threshold signal, said threshold signal having a threshold value, and wherein said constrained-envelope generator comprises:

a second complex summing circuit coupled to said first Nyquist-type filter and said quadrature threshold generator and configured to produce a difference signal stream, wherein said difference signal stream is a stream of difference pulses having difference pulse values of a first polarity and difference-pulse values of a second polarity;

a discriminator coupled to said second complex summing circuit and configured to produce an error signal stream from said difference signal stream, wherein said error signal stream is a stream of error pulses substantially coincident with said difference pulses of said difference signal stream, and wherein, when ones of said difference pulses have said first-polarity difference-pulse values, said coincident error pulses have error-pulse values substantially equal to said first-polarity difference-pulse values, and when ones of said difference pulses have said second-polarity difference-pulse values, said coincident error pulses have error-pulse values substantially equal to zero; and

a second Nyquist-type filter coupled to said discriminator and configured to produce said constrained-bandwidth error signal stream.

26. (Amended) A digital communications transmitter circuit as claimed in claim 24 wherein:

said filtered signal stream is a quadrature signal stream having a locus that passes proximate one of said phase points of said phase-point constellation at integral unit baud intervals;

said first filtered-signal data stream comprises on-time samples of said filtered signal stream, each of said on-time samples occurring substantially [coincident ally] coincidentally with said passage of said filtered signal locus proximate one of said phase points of said phase-point constellation; and

said second filtered-signal data stream comprises off-time samples of said filtered signal stream wherein each of said off-time samples occurs between adjacent ones of said on-time samples.

42. (Twice Amended) A digital communications transmitter circuit as claimed in claim 47 wherein said pulse-spreading filter is a Nyquist-type filter.

47. (Twice Amended) A constrained-envelope digital communications transmitter circuit comprising:

a pulse-spreading filter configured to receive a quadrature phase-point signal stream of digitized quadrature phase points and produce a filtered signal stream, said filtered signal stream exhibiting energy corresponding to each phase point spread throughout a plurality of unit baud intervals;

a constrained-envelope generator coupled to said pulse-spreading filter and configured to produce a constrained-bandwidth error signal stream;

a combining circuit coupled to said pulse-spreading filter and to said constrained envelope generator, said combining circuit configured to combine said filtered signal stream and said constrained-bandwidth error signal stream to produce a constrained envelope signal stream;

a substantially linear amplifier having an input coupled to said combining circuit and an output; and

a delay element coupled between said pulse-spreading filter and said combining circuit;

wherein:

said pulse-spreading filter is a first pulse-spreading filter; and

said constrained-envelope generator comprises a second pulse-spreading filter coupled to said combining circuit;

wherein:

said first pulse-spreading filter is configured so that each phase point is transformed into a Nyquist-type datum burst extending over a plurality of unit baud intervals, having a datum-burst peak value occurring in one of said plurality of unit baud intervals and datum-burst zero values occurring substantially at integral unit baud intervals away from said datum-burst peak value, so that said filtered signal stream in each unit baud interval substantially equals the sum of said Nyquist-type datum bursts from a plurality of phase points; and

said constrained-envelope generator is configured so that said second pulse spreading filter receives error pulses, transforms each error pulse into a Nyquist-type error burst extending over a plurality of unit baud intervals, having an error-burst peak value occurring in one of said plurality of unit baud intervals and error-burst zero values occurring substantially at integral unit baud intervals away from said error-burst peak value, so that said constrained-bandwidth error signal stream in each unit baud interval substantially equals the sum of said Nyquist-type error bursts from a plurality of error pulses.

48. (Twice Amended) A digital communications transmitter circuit as claimed in claim 47 wherein said constrained-envelope generator is configured so that said Nyquist-type error bursts exhibit said error-burst peak values and said error-burst zero values at instances in time when said Nyquist-type datum bursts exhibit neither said datum-burst peak values nor said datum-burst zero values.

Please cancel claim 50.

51. (Twice Amended) A constrained-envelope digital communications transmitter circuit comprising:

a pulse-spreading filter configured to receive a quadrature phase-point signal stream of digitized quadrature phase points and produce a filtered signal stream, said filtered signal stream

exhibiting energy corresponding to each phase point spread throughout a plurality of unit baud intervals;

a constrained-envelope generator coupled to said pulse-spreading filter and configured to produce a constrained-bandwidth error signal stream;

a combining circuit coupled to said pulse-spreading filter and to said constrained envelope generator, said combining circuit configured to combine said filtered signal stream and said constrained-bandwidth error signal stream to produce a constrained envelope signal stream;

a substantially linear amplifier having an input coupled to said combining circuit and having an output; and

a delay element coupled between said pulse-spreading filter and said combining circuit;

wherein:

said pulse-spreading filter is a first pulse-spreading filter; and

said constrained-envelope generator comprises a second pulse-spreading filter coupled to said combining circuit;

wherein:

said first pulse-spreading filter receives one quadrature phase point per unit baud interval and produces two complex samples of said filtered signal stream per unit baud interval;

said constrained-envelope generator evaluates one of said two complex samples of said filtered signal stream produced by said first pulse-spreading filter per unit baud interval; and

said second pulse-spreading filter receives one error pulse per unit baud interval and produces two complex samples of said constrained-envelope error-signal stream per unit baud interval.

55. (Twice Amended) A constrained-envelope digital communications transmitter circuit comprising:

a pulse-spreading filter configured to receive a quadrature phase-point signal stream of digitized quadrature phase points and produce a filtered signal stream, said filtered signal stream exhibiting energy corresponding to each phase point spread throughout a plurality of unit baud intervals;

a constrained-envelope generator coupled to said pulse-spreading filter and configured to produce a constrained-bandwidth error signal stream;

a combining circuit coupled to said pulse-spreading filter and to said constrained envelope generator, said combining circuit configured to combine said filtered signal stream and said constrained-bandwidth error signal stream to produce a constrained envelope signal stream;

a substantially linear amplifier having an input coupled to said combining circuit and having an output; and

a delay element coupled between said pulse-spreading filter and said combining circuit;

wherein:

said constrained-envelope generator is an off-time constrained-envelope generator;

said constrained-bandwidth error signal stream is an off-time constrained bandwidth error signal stream;

said transmitter circuit additionally comprises an on-time constrained-envelope generator coupled to said pulse-spreading filter and configured to produce an on-time constrained-bandwidth error signal stream; and

said combining circuit is coupled to said pulse-spreading filter, to said off-time constrained-envelope generator, and to said on-time constrained-envelope generator, and said combining circuit is configured to combine said filtered signal stream, said off-time constrained-bandwidth error signal stream, and said on-time constrained bandwidth error signal stream to produce said constrained-envelope signal stream.

59. (Twice Amended) A transmission method as claimed in claim 61 wherein:

said generating step comprises the step of filtering an error signal stream having one error pulse per unit baud interval to produce said constrained-bandwidth error signal stream, said filtering step spreading energy from each error pulse in said error signal stream over a plurality of unit baud intervals;

said step of delaying said filtered signal stream comprises producing a delayed signal stream; and

said combining step combines said delayed signal stream and said constrained bandwidth error signal stream to produce said constrained-envelope signal stream.

STATUS OF CLAIMS

1: Canceled.

2-4: Pending.

5: Canceled.

6-8: Pending

9: Canceled.

10: Pending.

11-13: Canceled.

14: Pending.

15-18: Canceled.

19, 20: Pending.

21-23: Canceled.

24-29: Pending.

30-41: Canceled.

42-44: Pending.

45, 46: Canceled.

47-49: Pending

50: Canceled

51-55: Pending.

56-57: Canceled.

58-59: Pending.

60: Canceled.

61-64: Pending.